A brief history of the UT-AEC Agricultural Research Laboratory - Part three

(As published in The Oak Ridger's Historically Speaking column on November 3, 2009)

Now with the lengthy introduction behind us, let me explain how all the unusual scientific study of animals and agriculture came to be and how it came to be located at Oak Ridge. It is a most unusual and unique story. I will also give you the "rest of the story" about how the UT-AEC Agricultural Research Laboratory became the Comparative Animal Research Laboratory and why that name change was so significant.

We will also examine why the change from the University of Tennessee to the Oak Ridge Associated Universities was a necessary move that the people affected by the change had trouble understanding. Joe Lenhard will be our guide through this unusual transition as he was personally responsible for making it happen. As usual, Joe gives us insight into the real decisions that were never made public and were necessary to keep the funding flowing to Oak Ridge from the Department of Energy.

You must realize that Joe's heart is with Oak Ridge and that he has personally taken the lead in many sticky situations where significant amounts of funding for Oak Ridge was in danger of being cut and each time he has succeeded in keeping or increasing the funding. Joe is a champion of Oak Ridge and has been an excellent one for years.

As we left off last week, the explosion of the world's first atomic device, "The Gadget," a plutonium fission device tested on July 16, 1945, along with Little Boy and Fat Man would become three explosions that would change the world forever! One of the first things to change was the realization of the damage radiation could do…first to some cattle.

Needless to say, the farthest thing from the minds of the scientists who were gathered at Socorro, New Mexico, when on July 16, 1945, the world changed forever, was that a herd of cattle was being exposed to nuclear radiation and fallout. The most powerful force yet seen in the history of the world was released in the atomic explosion of Trinity, the first test of the technology for nuclear weapons.

The small town of Socorro, New Mexico, just 35 miles northwest of the Trinity site was the closest town to the test site. The White Sands Proving Grounds, headquartered near Alamogordo, New Mexico, was the official government installation where this world-changing experiment was first tested. This was the beginning of the Atomic Age! The world would NEVER be the same after July 16, 1945.

Rare is it that such a major shift in world affairs is seen and rarer still is it for civilization to retain control of such a major shift. Yet, the United States has done just that over the years, albeit with considerable concern for the method chosen. The individuals most central to the shift in world affairs were a group of scientists split on the best course of action once the atomic "genie" was out of the bottle. Yet, they could not exert control over the political process that wretched from their hands the tremendous power that they had so fervently worked to create.

Robert Oppenheimer, Niels Bohr and David Lilienthal are examples of scientists and political leaders who saw the atomic explosion's tremendous release of energy and its potential for destructive power as a fearful possibility for the future. They sought to contain the newly released power. They had realized, too late to stop it, that the atomic bomb was a far more deadly weapon than any of them had imagined. This most powerful force on earth now proven to exist was taking on a life of its own.

A herd of Hereford cattle, as large as 350 head, was close enough to the explosion to receive radiation damage. In December, 1945, 75 head were purchased (at market price) with 17 head being shipped to Los Alamos and 58 head being shipped by train to Oak Ridge. Of the 17 head sent to Los Alamos, seven calved, all normal. The scientists at Los Alamos grew to see the cattle as a nuisance and eventually shipped all 24 head they had to Oak Ridge.

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The cattle were first managed in Oak Ridge by the Roane Anderson Company of the Manhattan Project, then on January 1, 1947, the Atomic Energy Commission came into being and the cattle became their responsibility. This arrangement continued until the spring of 1948 when AEC officials in Oak Ridge asked the University of Tennessee for technical personnel to develop a management program for the cattle.

On May 11, 1948, the University of Tennessee agreed with the AEC to form a program in the general field of radioisotopes and radiation in agriculture. This resulted in the UT-AEC Agricultural Research Laboratory and the 5,000 acres along the Clinch River as well as the Scarboro School building for laboratories and offices to sustain such an operation. Other buildings were quickly built and major additions quickly made.

While, according to the 1960's publication describing the operation, the original single objective was "The Investigation of the Effects of the 1945 Bomb Irradiation upon the General health, Growth, Breeding Efficiency, and Relative Fertility of the Exposed Hereford Cattle and Their Offspring." Within a few years a three-fold objective was being implemented.

First, the research facility intended to "carry on certain programmatic work requested by the AEC; second, to carry on fundamental studies on agricultural problems using radioactive isotopes and radiation; and third, to enable graduate students and scientists to become acquainted with the application of nuclear energy in the field of agriculture." See the drift away from the Trinity exposed cattle to broader agricultural objectives?

Additional animals were procured for testing and by the height of the UT-AEC Agricultural Research Laboratory's program there were some 500 cattle, 300 burros and ponies, 250 sheep, 250 swine, plus a variety of chickens, rabbits, rats and other animals. The expansion into seed irradiation was also a large part of the research. That is where the radiation accident occurred that we will examine in a future installment of the history of this most unusual facility in Oak Ridge.

There were 160 people working on this huge operation at one time and there were daily experiments being conducted at various testing stations that were constructed. Huge barns were necessary and 40 percent of the 5,000 acres were cleared and planted in crops to feed the animals.

The experiments were determined primarily by the UT Departments of Animal Husbandry and Dairying and the Agricultural Experiment Station. At its peak the facilities were valued at $2 million.

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The semi-circular concrete block wall intended to contain the radiation being used on the cattle or other large animals while preventing inadvertent exposure in the direction of the lake

Joe points out the location of the sources and the spacing rods that assured the cattle did not come too close to the radiation sources but would be exposed equally regardless of where they wandered inside the fenced in area of several raised sources

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Large concrete block shield built on top of a small hill overlooking the irradiation facility that had lights installed to indicate when the radiation sources were exposed below in the fenced in area